No. 840,603. PATENTED JAN. 8, 1907.

O. O. BODVIG.

PNEUMATIC STRAW STACKER.

APPLICATION FILED FEB. 15, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

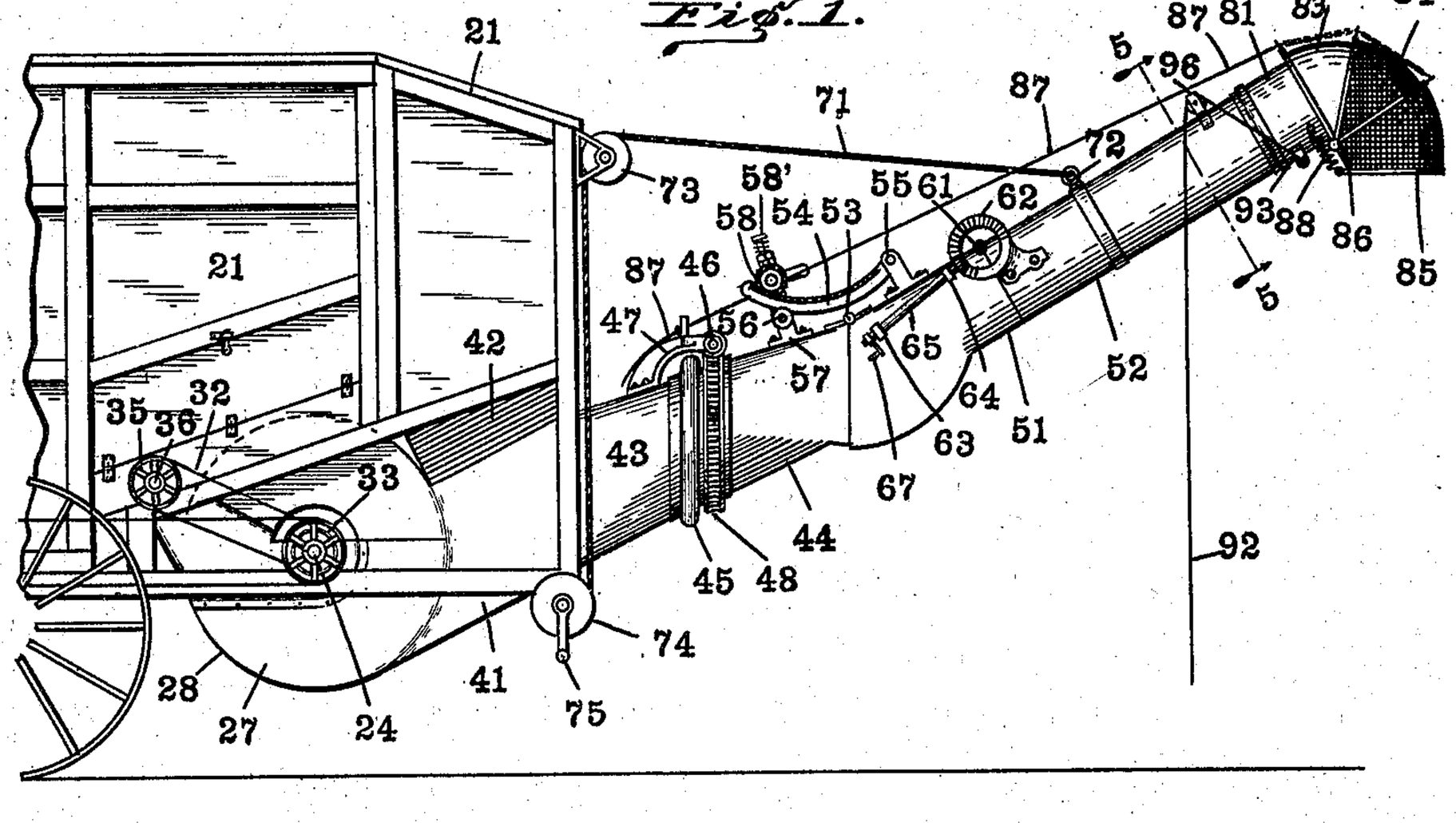
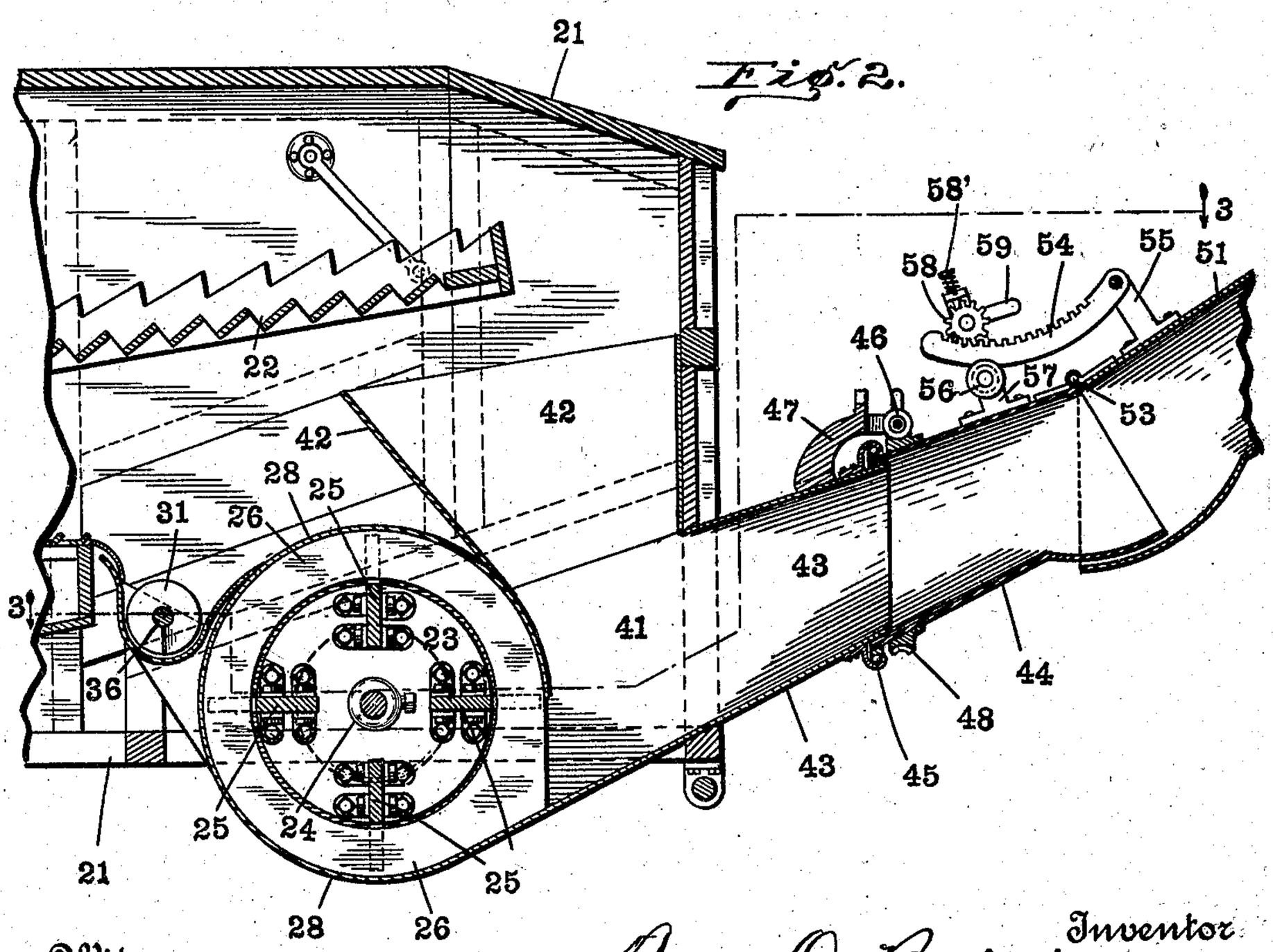


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

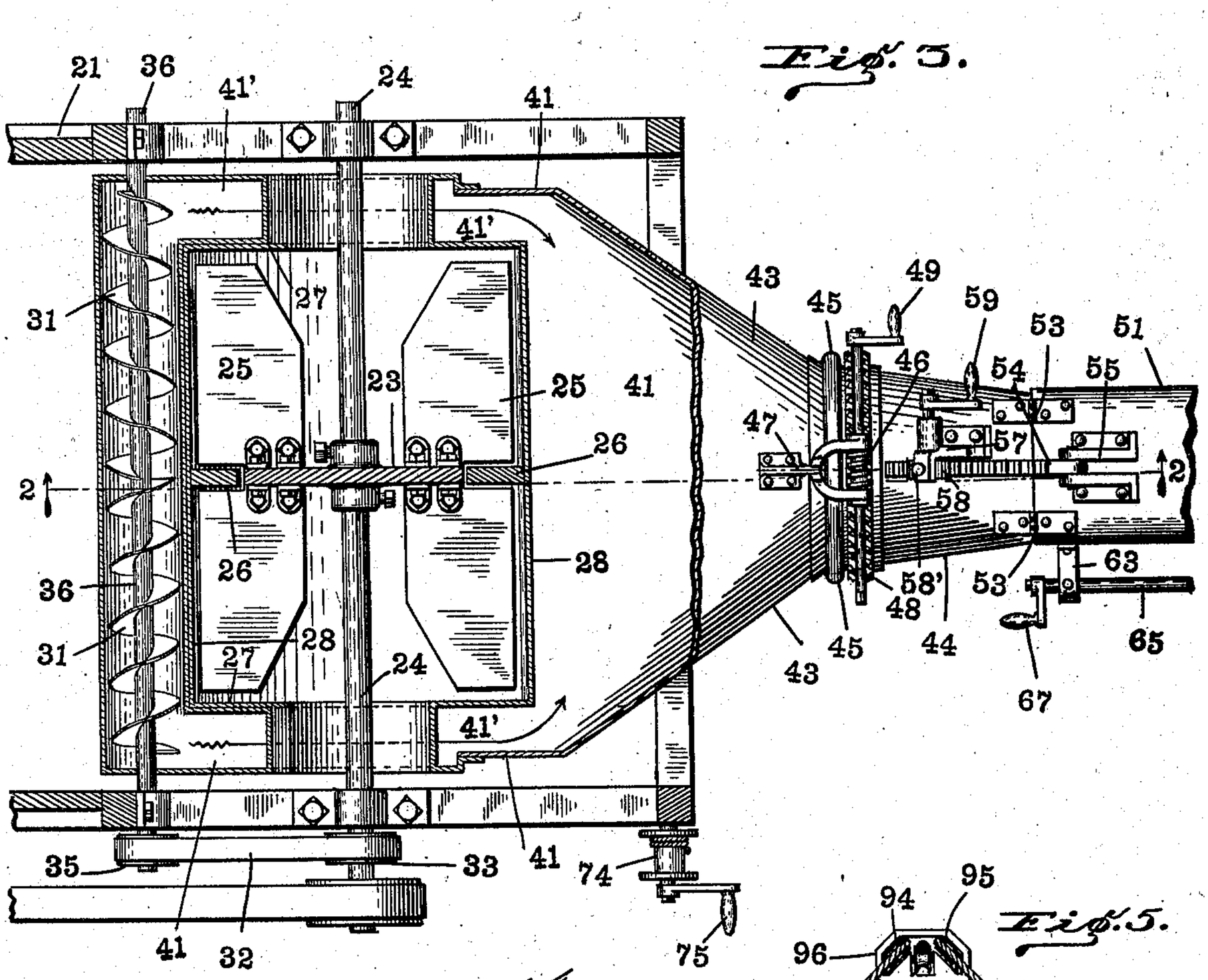


Fig. 4.

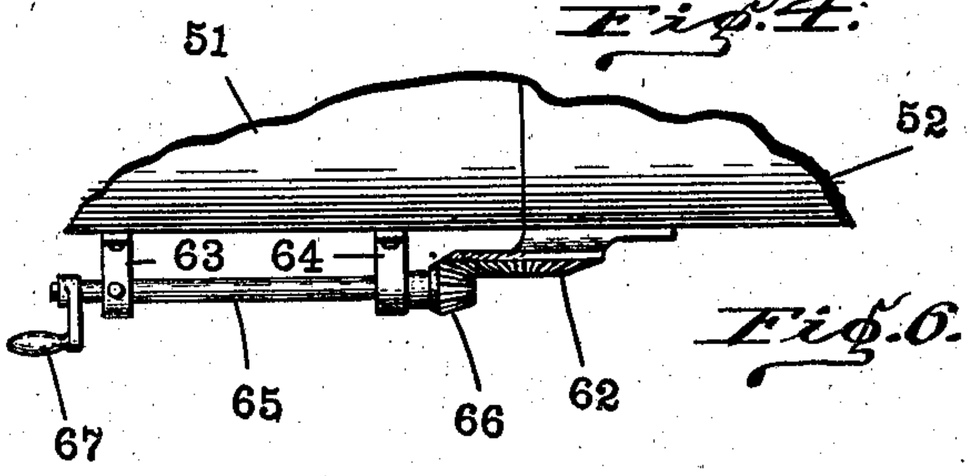


Fig. 5.

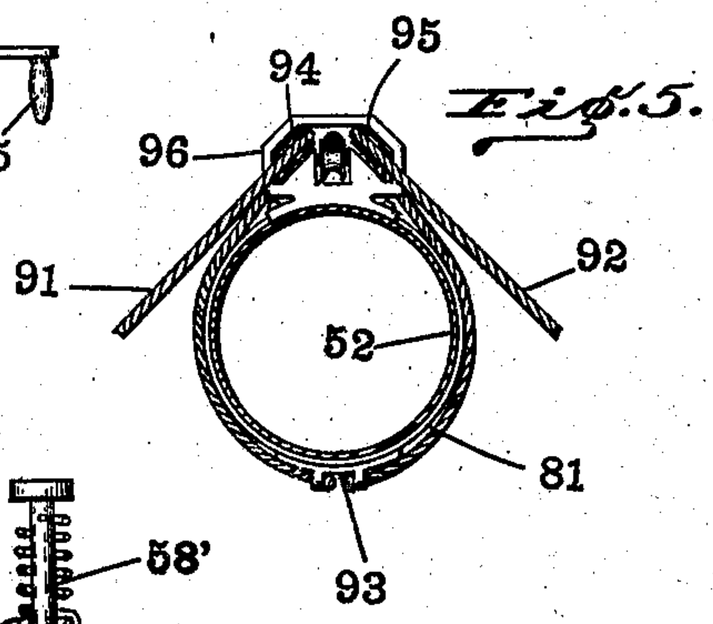
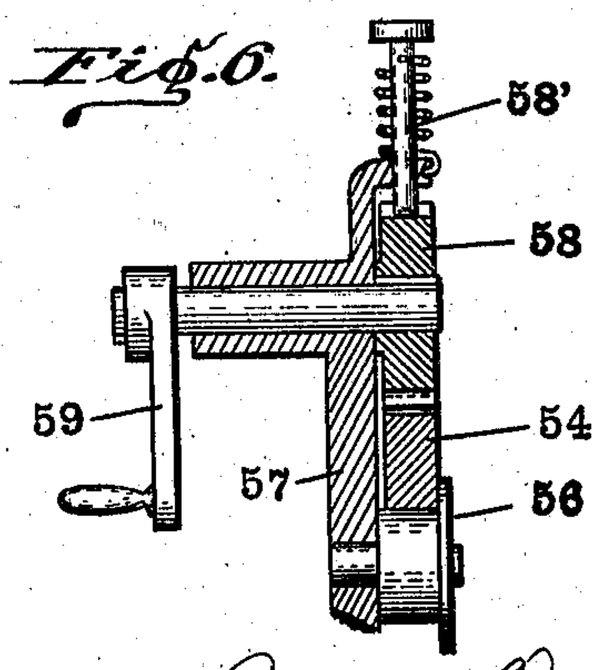


Fig. 6.



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UNITED STATES PATENT OFFICE.

OSCAR O. BODVIG, OF WARD COUNTY, NORTH DAKOTA, ASSIGNOR TO THE INDIANA MANUFACTURING COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF WEST VIRGINIA.

PNEUMATIC STRAW-STACKER.

No. 840,603. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed February 15, 1906. Serial No. 301,179.

To all whom it may concern:

Be it known that I, OSCAR O. BODVIG, a citizen of the United States, residing in the county of Ward and State of North Dakota, have invented certain new and useful Improvements in Pneumatic Straw-Stackers, of which the following is a specification.

My invention consists in certain improvements in that class of devices for conveying the straw away from threshing-machines known as "pneumatic straw-stackers."

Said invention will first be fully described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a side elevation of the rear portion of a threshing-machine or separator equipped with a pneumatic straw-stacker embodying my said invention; Fig. 2, a detail vertical sectional view, on an enlarged scale, as seen from the dotted line 2 2 in Fig. 3; Fig. 3, a view, partially in plan and partially in horizontal section, as seen when looking downwardly from the dotted line 3 3 in Fig. 2; Fig. 4, a detail plan view of one of my improved folding devices, on an enlarged scale; Fig. 5. a vertical sectional view as seen when looking in the direction indicated by the arrows from the dotted line 5 5 in Fig. 1, and Fig. 6 a detail of the vertical adjusting means.

The threshing-machine or separator 21 may be of any ordinary or desired make or construction. Within the lower rear portion thereof (beneath the straw-floor 22) I place a fan 23 on a suitable horizontal shaft 24. The blades 25 of this fan are of a peculiar form. Each blade has a cut at its middle portion extending from its outer edge toward the center, which is adapted to receive a partition 26 in the fan-housing, by means of which said housing is divided into two fan-chambers, my fan being thus practically a double fan, although made in a single structure. This feature is best shown in Fig. 3. The fan-casing consists of heads 27 and a surrounding substantially circular wall 28 and the above-described annular ring 26, which said ring is secured to the middle portion of the shell 28 and projects inwardly toward the center, dividing and separating the fan-blades at their outer sides, as before described.

The lower part of the fan-casing is axially extended beyond the ends of the fan to form chaff-passages 41′, which lead directly to the chamber 41, hereinafter described. Arranged behind this fan-housing is a screw conveyer 31, which serves to carry the chaff (which falls down behind said fan-housing) sidewise and discharge it at the ends, where it will be drawn into the adjacent passage 41′, all as is best shown in Figs. 2 and 3. This chaff-conveyer is driven by the belt 32, running from a pulley 33 on the fan-shaft 24 to a pulley 35 on the auger-shaft 36.

Leading out from the front side of the fan-housing is a chamber structure 41, into which the fan discharges and which forms the lower portion of the hopper 42, which receives the straw from the straw-floor 22. This chamber converges as it extends forward from said hopper and terminates in a nozzle-like end which communicates with the base of the delivery tube or chute of the stacker proper. This nozzle-like end is divided into two portions 43 and 44, the latter being mounted upon the rim of the former by means of an annular track 45, which preferably (as shown in Fig. 2) embodies a ball-bearing to enable the member 44 and the parts carried thereby to be revolved relatively to the part 43 with facility. The actual work of revolving the structure is accomplished by a suitable gearing. In the form of gearing shown a worm 46, mounted in suitable bearings in a bracket 47 on part 43, engages with worm-ring 48 on part 44, the screw being provided with crank 49, as shown in Fig. 3.

The straw-stacker tube or chute is shown as consisting of two sections 51 and 52. As a whole it is hinged to the outer nozzle part 44 by a hinge 53. A curved rack-bar 54 is connected to a suitable arm 55 on part 51 and extends back and rests on a bearing-roller 56, carried by housing 57 on the part 44. A pinion 58 (held in any position by the spring-detent 58′) is also mounted in housing 57 and is provided with a crank 59, by means of which it may be turned. As the lower end of part 51 is suitably fitted to the corresponding

end of part 44, (see especially Fig. 3,) I am enabled by this means to vary the inclination of the straw-delivery tube or chute (by manipulation of the device just described) without opening the joint between said parts 51 and 44.

The two tube-sections 51 and 52 are connected by hinge 61 in such manner that the part 52 (and the hood and other portions carried thereby) may be folded back onto the separator for storage or transportation. In order that I may do this easily, I attach to the part 52 a gear-rim 62 and mount upon the part 51 (in suitable bearings 63 and 64) a shaft 65, having a pinion 66, which engages with said gear-rim. Said shaft being provided with crank 67, I am enabled to operate said pinion and gear-rim to fold the outer tube portion over, as will be readily understood.

The weight of the tube or chute and its associated parts is supported by a rope 71, (see Fig. 1,) which is attached to a suitable eye 72 thereon and passes thence back over a sheave or pulley 73 on the separator and thence down to a winding-drum 74, provided with a crank 75 and which is situated at a point on the lower portion of the separator-frame where it is conveniently accessible and may be easily manipulated by the operator.

The hood at the outer end of the delivery tube or chute is shown as comprising a neck 81, which is revolubly mounted on the end of the tube member 52, and several sections, as 83, 84, and 85, which are hingedly mounted at 86 and are adapted to be collapsed by pulling on a suitable cord 87, but are held distended when force is not applied to said cord by a spring 88. The outer hood-sections are reticulated or perforated, as shown, so that the air will escape, permitting the straw to drop on the stack instead of being blown violently thereon by the force of the blast. The revolving of the neck 81 (and the parts carried thereby) on the tube part 52 is accomplished by means of pull-ropes 91 and 92, which are attached to a suitable eye structure 93 on the under side of said neck and pass thence up around over sheaves 94 and 95 in a housing 96 on the upper side of tube portion 52.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a pneumatic straw-stacker, with the delivery tube or chute, of a horizontally-disposed fan-housing having a central partition in the form of an annular rim extending inwardly from the casing, and a fan the blades whereof are cut away to pass astride said central partition, whereby a double fan and fan-housing are embodied in a single structure.

2. The combination, in a pneumatic straw-stacker, of the fan, the fan-housing, a hopper-like structure for receiving the straw which develops into a nozzle-like end, a delivery tube or chute hingedly connected to said nozzle-like end, a pivoted segmental rack connected to the structure on one side of the hinge, the housing connected to the structure on the other side of the hinge, and a pinion mounted in said housing structure and engaging with said segmental rack, whereby said delivery tube or chute may be raised or lowered—said nozzle-like end and the adjacent portion of the tube or chute having a segmental formation and one overlapping the other.

3. The combination, in a pneumatic straw-stacker, with the fan and fan-housing, of a delivery tube or chute connected to said fan-housing composed of two parts hingedly connected together, one of said parts having a curved rack pivoted on said part at a point other than the hinge-pivot and the other having a shaft and pinion engaging with said circular rack, whereby the outer portion of said delivery tube or chute may be folded over in respect to the inner portion.

4. The combination, in a pneumatic straw-stacker, of a fan, a fan-casing therefor extending transversely across the rear portion of the separator, a casing into which the fan-casing discharges, a chaff-conveyer arranged behind said fan-casing and adapted to convey the chaff toward the sides, and inclosures leading said chaff around the fan-casing from said conveyer to the casing into which the fan-casing discharges.

5. The combination, in a pneumatic straw-stacker, of the fan, the fan-casing, a hopper developing into a nozzle-like end, said nozzle-like end being composed of sections one revoluble in respect to the other, and a trunk or chute composed of sections hingedly connected together and to the nozzle one hinge being provided for purpose of vertical adjustment and the other hinge being provided for purposes of folding the outer portion of the chute over for storage or transportation, and means for effecting said hinge movements separately.

6. The combination, in a pneumatic straw-stacker, of a fan, a casing therefor having a lower portion axially extended beyond the ends of the fan, and a chaff-chute leading into said extended portion.

7. The combination, in a pneumatic straw-stacker, of a fan, a casing therefor having a lower portion extending beyond the ends of the fan structure and surrounding the eyes of the fan, and a chaff-chute leading into the extended portions of the fan-casing structure.

8. The combination, in a pneumatic straw-stacker, of a fan having tubular fan-eyes, a casing surrounding said fan of a greater

length than said fan thereby leaving inclosed passages between the fan and the outer walls of said casing surrounding the tubular fan-eyes, and a chaff-chute parallel to the fan and extending beyond the ends thereof and communicating with said inclosed passages.

In witness whereof I have hereunto set my hand and seal, at Crosby, North Dakota, this 23d day of January, A. D. 1906.

OSCAR O. BODVIG. [L. S.]

Witnesses:
A. G. ENGDAHL,
OSCAR STOREIM.